THE GENOTYPES OF THE NORTH AMERICAN HADENINÆ (LEPIDOPTERA, NOCTUIDÆ)

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(*Concluded from page 107*)

Lophoceramica artega Barnes. Fig. 24A.

Uncus—tongue shaped; Peniculus—present; Scaphium—absent; Subscaphium—absent; Harpe—peaked, not spinose; Marginal spines—a few; Corona—absent; Protuberances—a slender bent rod and a short process ending in a spine; Editum—present; Clavus—rounded; Ædœagus—not ornamented; Vesica—not ornamented.

Tricholita semiaperta Morr. Fig. 28A.

Uncus—tongue shaped; Peniculus—present; Scaphium—absent; Harpe—peaked and spinose; Marginal spines—one; Corona—absent; Protuberances—a curved strap and a smaller strap; Editum—present; Clavus—rounded; Ædœagus—without ornamentation; Vesica—with a single cornutus.

Trichopolia dentatella Grt. Fig. 32A.

Uncus—simple; Peniculus—present; Scaphium—absent; Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—none; Corona—none; Protuberances—an inwardly curved sclerotized bar and a small flat structure produced to a point; Editum—present; Clavus—rounded; Ædœagus—orifice hooked on one side, scobinated on the other; Vesica—with a cornutus.

Group IV

No material available for a study of the male genitalia.

Group V

In the two species included in this group, the harpes are constricted at their proximal portions.

Epia echii Bork. Fig. 49A.

Uncus—cygnated; Peniculus—absent; Scaphium—absent; Subscaphium—slight indication; Harpe—trigonate, spinose;

Marginal spines—absent; Corona—present; Protuberances—a flat lobe rounded at the tip and an irregular hook-shaped structure; Editum—present; Clavus—rounded; Ædœagus—without ornamentation; Vesica—with cornutus; Juxta—present.

Admetovis oxymorus Grt. Fig. 54A.

Uncus—diamond shaped; Peniculus—present; Scaphium—absent; Subscaphium—indications; Harpe—rounded; Marginal spines—present; Corona—present; Protuberances—a chitinous structure rounded at the end; Editum—absent; Clavus—produced, with short bristly hairs on the produced area; Sacculus elongated into a scleritized ridge; Ædœagus—with a cornutus at the base and a slight hook at the orifice; Vesica—with cornutus.

Group VI

Section A

Subsection Ia

Males of *Chabuata ampla* Wlk., *Aletia vitellina* Hub., and *Meterana pictula* White were not available for study, so cannot be included in the following discussion.

In this subsection there are eight genera whose relationships are not easy to determine. They seem to have much in common and structurally they overlap each other. If one may rely on the structure of the male genitalia to indicate relationships, then they can be grouped as follows:

(1) Ulolonche, Zosteropoda, and Neleucania
(2) Melanchra and Hyssia
(3) Ceramica (4) Hyphilare (5) Anarta

On this basis only one genus may be considered synonymic—*e.g.* Hyssia with Melanchra.

Ulolonche niveiguttata Grote. Fig. 84A.

Uncus—simple; Peniculus—absent ?; Scaphium—absent; Subscaphium—absent; Harpe—peaked, spinose; Marginal spines—absent; Corona—absent; Protuberance—a membraneous fold and a long surved bar; Editum—present; Clavus—rounded; Ædœagus—without ornamentation; Vesica—with rows of teeth.

Zosteropoda hirtipes Grote. Fig. 91A.

Uncus—forked; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—present; Corona—absent; Protuberance—a curved strap; Editum—present; Clavus—produced and bearing a few bristly hairs; Ædœagus—without ornamentation; Vesica—bearing several small spines, one bulbed cornutus, and a small cornutus without a bulb.

Neleucania niveicosta Smith. Fig. 95A.

Uncus—forked; Peniculus—present; Scaphium and Subscaphium—absent; Harpe-rounded; Marginal spines—present; Corona—absent; Protuberances—half-way up the harpe a long curved spine, at the base a smaller curved spine; Editum—present?; Clavus—produced and bearing a few hairs; Ædœagus—with one large spine; Vesica—with several small spines.

Melanchra persicariæ Linn. Fig. 58A.

Uncus—tongue shaped; Peniculus—absent; Scaphium—absent; Subscaphium—large, diamond shaped; Harpe—trigonate, spinose; Marginal spines—absent; Corona—absent; Protuberance—a fold in the harpe; Editum—present; Clavus—produced, scobinated; Ædœagus—orifice with two lateral spines; Vesica—with cornutus.

Hyssia cavernosa Eversm. Fig. 65A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—trigonate, spinose; Marginal spines—a few; Corona—present; Protuberances—an irregular sclerotized ridge ending in a protruding disc; Editum—present; Clavus—rounded; Ædœagus—orifice provided with a ventral and lateral hook; Vesica—not ornamented.

Ceramica picta Harris. Fig. 72A.

Uncus—knobbed; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—peaked and spinose, the dorsal border with two thumb-like projections; Marginal spines—absent; Corona—absent; Protuberances—a mere thickening of the wall of the sacculus; Editum—present; Clavus—rounded; Ædœagus—orifice provided with lateral hooks; Vesica—not ornamented.

Hyphilare albipuncta Schiff. Fig. 69A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—present; Corona—absent; Protuberances—a distorted "Y" shaped structure, one arm of the "Y" broad and the other narrow. There is also a curved spine; Editum—present ?; Clavus—produced; Ædœagus—without ornamentation; Vesica—without ornamentation.

Anarta myrtilli Linn. Fig. 76A.

Uncus—cygnated; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—asymmetrical, rounded; Marginal spines—.....; Corona—.....; Protuberances—left clasper a rough tapered arm, right clasper much larger produced into a peaked, flattened plate; Editum—.....; Clavus—rounded; Ædœagus—.....; Vesica—with a large bulbed cornutus.

Subsection Ib

In this subsection there are fourteen genotypes but the males of four of them were not available for a study of their genitalia. These were *Dargida grammivora* Wlk. (*gramminivora* Wlk.), *Eriopyga punctulum* Gn., *Naesia moesta* Wlk., and *Borolia furcifera* Moore. The last three were placed in the same group with Meliana. Meliana is the only genotype of the group of which males were available. Whether male genitalia can be used to tie these four genotypes together cannot be determind until these structures have been studied in the other three genotypes. *Dargida gramminivora* Wlk. is the only species lacking in the "Hadena" group. On the bases of other characters, the eight genotypes of this group tie up very well but as soon as a study of the male genitalia is made the linkage does not seem so close. The "Hadena" group breaks up in such a way that Hadena is associated only with Aethria, Astrapetis and possibly Diataraxia. Even here one may have to stretch a point to keep the group together. The other five genotypes on the basis of their male genitalia are independent entities. At this point we are face to face with the question whether we should group these fourteen genotypes together because of similarity in frons, antennæ and

other similar structures or should they be split because their male genitalia show such differences.

I have chosen to keep them together because the male genitalia of other congeneric species must be studied before we can determine what genital characters are of generic value. The differences we note now may be specific and not generic.

Meliana flammea Curt. Fig. 143A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded; Marginal spines—present; Corona—absent; Protuberances—a tripartate organ, the inner lobe club shaped provided with a few spines; the middle a simple rod; the outer broad and flat; Editum—present, prominent; Clavus—irregular; Ædœagus—without ornamentation; Vesica—provided with a bunch of teeth and a row of small spines.

Heliophila pallens Linn. Fig. 147A.

Uncus—cygnated; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded and spinose; Marginal spines—present; Corona—absent; Protuberances—a stout curved strap and a slender rod; Editum—present; Clavus—slightly rounded; Ædœagus—without ornamentation; Vesica—with a band of teeth.

Pseudorthodes vecors Gn. Fig. 131A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, not spinose; Marginal spines—absent; Corona—absent; Protuberances—a large curved strap; Editum—absent; Clavus—rounded; Ædœagus—without ornamentation; Vesica—with cornutus.

Hadena cucubali Schiff. Fig. 99A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent ?; Corona—absent; Protuberances—a fold and a papilla from the base of the cucullus; Editum—.....; Clavus—strongly scobinated; Ædœagus—with serrations at the orifice and extending along the vesica.

Aethria serena Schiff. Fig. 103A.

Uncus—tongue shaped; Peniculus—present; Scaphium—absent; Subscaphium—slight indications; Harpe—rounded; Marginal spines—few; Corona—present; Protuberances—a broad and flattened strap rounded at its tip; also a chitinous ridge; Editum—present; Clavus—strongly produced; Ædœagus—orifice with a lateral hook; Vesica—with a cornutus.

Astrapetis dentina Schiff. Fig. 107A.

Uncus—tongue shaped; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—few; Corona—present; Protuberances—a chitinous ridge above which there is a flat strap ending in a round curved head; Editum—present; Clavus—rounded; Ædœagus—orifice with a long lateral hook; Vesica—with a cluster of spines.

Diataraxia splendens Hub. Fig. 110A.

Uncus—simple and covered with spines; Peniculus—present; Scaphium—absent; Subscaphium—consists of two or more chitinous bands; Harpe—rounded; Marginal spines—absent; Corona—present; Protuberances—a chitinous thickening with a slender spine. There is also a bipartate organ, one part of which is a rounded lobe and the other a short pointed rod; Editum—present; Clavus—slightly produced and bearing a few bristles; Ædœagus—orifice without ornamentation; Vesica—with two lobes, one bearing a large bulbed cornutus, the other with a small bulbed cornutus.

Eupsephopaectes procinctus Gr. Fig. 117A.

Uncus—diamond shaped; Peniculus—present; Scaphium—absent; Subscaphium—absent; Harpe—trigonate; Marginal spines—absent; Corona—present; Protuberances—a very slender much curved rod bearing a few bristles at its tip. There is also a sharp, stout hook; Editum—.....; Clavus—scobinated; Ædœagus—without ornamentation; Vesica—without ornamentation.

Crocigrapha normani Grt. Fig. 120A.

Uncus—simple; Peniculus—present; Scaphium—absent; Subscaphium—indicated; Harpe—rounded, spinose; Marginal spines

—present; Corona—present; Protuberances—a flat "Y" shaped organ, one arm of which bears bristly hairs. There is also a curved rod terminating in a point; Editum—poorly developed; Clavus—produced; Ædœagus—orifice scobinated on one side; Vesica—with a bulbed cornutus.

Aplecta nebulosa Hufn. Fig. 124A.

Uncus—simple; Peniculus—indicated; Scaphium and Subscaphium—absent; Harpe—trigonate, spinose. One angle is produced and bears a spine; Marginal spines—present; Corona—present; Protuberances—the sacculum provided with a terminal prominence which is spinose. The inner edge of the sacculus is very irregular, more so on the right side. On the right side there is also a curved hook hidden in the figure by the large spines. On the left side there is another more irregular hook and a small strap like projection slightly knobbed at its tip; Editum—present?; Clavus—very irregular; Ædœagus—without ornamentation; Vesica—without ornamentation.

Subsection II

There are twelve genotypes in this section, and all twelve are figured. They have so little in common with each other that there is no way to group them. There are two species which the writer expected to exhibit similar genital characters. These are *Nephelodes emmedonia* Cram. (*minians* Gn.) and *Monostola asiatica* Alph. Superficially they strongly resemble each other but their male genitalia would not indicate close relationship. Here is a place where the male genitalia may be of specific rather than generic value.

Morrisonia evicta Grt. Fig. 151A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—almost trigonate; Marginal spines—present; Corona—present; Protuberances—a very slender chitinous rod and a large curved strap; Editum—absent; Clavus—rounded; Ædœagus—without ornamentation; Vesica—without ornamentation.

Xylomyges conspicillaris Linn. Fig. 155A.

Uncus—slightly cygnated; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—truncate, not spinose; Marginal

spines—present; Corona—absent; Protuberances—an irregular chitinous ridge in a small rod, also a prominent curved hook; Editum—indicated; Clavus—produced; Ædœagus—without ornamentation; Vesica—with a row of teeth and an irregular hook.

Himella fidelis Grt. Fig. 159A.

Uncus—simple; Peniculus—absent; Scaphium and Subscaphium—absent; Harpe—truncated, with the edges bordered, some spines present; Marginal spines—absent; Corona—absent; Protuberances—a small chitinous projection bearing a short papilla provided with spines and a small pointed projection. There is also a very long chitinous rod ending in a small spine; Editum—absent; Clavus—rounded; Ædœagus—not ornamented; Vesica—not ornamented.

Alysia specifica Gn. Fig. 163A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent; Corona—present; Protuberances—two flat straps turned out at their tips; Editum—absent; Clavus—rounded?; Ædœagus—.....; Vesica—.....

Hyperepia jugifera Dyar. (pl. B. & L.). Fig. 167A.

Uncus—cygnated; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent; Corona—absent; Protuberances—a somewhat hooked shaped spine and a smaller curved chitinous protuberance; Editum—present; Clavus—rounded; Ædœagus—with one stout spine and two clusters of smaller spines. One cluster lies dorsad and the other laterad and on the opposite side from the stout spine; Vesica—without ornamentation.

Nephelodes emmedonia Cram. (*minians* Gn.). Fig. 171A.

Uncus—spoon shaped; Peniculum—present; Scaphium and Subscaphium—absent; Harpe—rounded with pollex that bears two small spines at its tip. Spinose; Marginal spines—present; Corona—absent; Protuberances—a flat curved strap. The one on the right side longer. There is also another flat strap rounded

at its tip; Editum—present; Clavus—scobinated; Ædœagus—without ornamentation; Vesica—without ornamentation.

Monostola asiatica Alph. Fig. 175A.

Uncus—broad with tip truncated; Peniculum—present; Scaphium and Subscaphium—absent; Harpe—rounded, hardly spinose; Marginal spines—absent; Corona—present; Protuberances—an incurved organ roughened at its tip; Editum—present; Clavus—scobinated; Ædœagus—without ornamentation; Vesica—without ornamentation.

Charaeas cespitis Denn. & Schiff. Fig. 179A.

Uncus—tongue shaped; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—more or less truncated, spinose; Marginal spines—absent; Corona—absent; Protuberances—a flattened organ with its free edge curved; Editum—present; Clavus—rounded; Ædœagus—without ornamentation; Vesica—with a large cornutus and a roughened area.

Haderonia subarschanica Staud. Fig. 182A.

Uncus—cygnated; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—trigonate, spinose with a larger spine; Marginal spines—present; Corona—present; Protuberances—a weak chitinous bar and a small tubercle; Editum—absent; Clavus—rounded; Ædœagus—without ornamentation; Vesica—without ornamentation.

Epineuronia popularis Fab. Fig. 186A.

Uncus—spatulate; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—peaked, hairy, and with a pollex; Marginal spines—present; Corona—absent; Protuberances—a flattened curved lobe which appears to be pointed when viewed from the side; Editum—present; Clavus—rounded; Ædœagus—a band of teeth near the orifice; Vesica—roughened.

Acerra normalis Grt. Fig. 190A.

Uncus—broad, diamond shaped at tip; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—peaked; Marginal spines—few; Corona—absent; Protuberances—a small scobinated tubercle and a rough bar bent at an angle; Editum—absent;

Clavus—rounded; Ædœagus—orifice with two scobinated ridges; Vesica—not ornamented.

Stretchia plusiaeformis Hy. Edw. Fig. 194A.

Uncus—simple; Peniculus—present ?; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent; Corona—absent; Protuberances—a chitinous thickening and a slender curved bar; Editum—present; Clavus—rounded; Ædœagus—not ornamented; Vesica—scobinated and with a cornutus.

Section B

Subsection Ia

There are five genotypes in this subsection and the male genitalia of all of them are figured. It has been previously stated that Perigrapha resembles both Acerra and Stretchia. If one compares their male genitalia with that of Perigrapha, no resemblance can be seen. On the other hand, Eurypsyche has been separated from Meliana on the bases of frons and other characters but the male genitalia of the two genotypes have much in common. Further morphological studies on related species are needed to clear up some of these points of relationship.

Perigrapha i-cinctum Denn. & Schiff. Fig. 198A.

Uncus—broad, diamond tip; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—trigonate, spinose with one tip produced forming a protuberance which bears a tuft of marginal spines; Marginal spines—present; Corona—absent; Protuberances—a very small projection bearing a few stiff bristles, and a curved strap which may or may not be roughened along one edge; Editum—present; Clavus—rounded; Ædœagus—without ornamentation; Vesica—without ornamentation.

Xylomania hiemalis Grt. Fig. 202A.

Uncus—a knobbed tongue; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—peaked; Marginal spines—few; Corona—indicated; Protuberances—a very small chitinous spine and also another curved spine—Editum—present; Clavus—rounded; Ædœagus—not ornamented; Vesica—with a scobinated ridge and two small spines.

Engelhardtia ursina Smith. Fig. 206A.

Uncus—cygnated; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—broad, flattened at its apex with an indication of a pollex, not spinose; Marginal spines—absent; Corona—absent; Protuberances—a chitinous hook hardly free, and a curved spine; Editum—present; Clavus—rounded; Ædœagus—not ornamented; Vesica—with cornutus.

Lasiestra phoca Moschl. Fig. 210A.

Uncus—tongue shaped; Peniculus—.....; Scaphium and Subscaphium—absent; Harpe—rounded; Marginal spines—few; Corona—present; Protuberances—a curved claw turned inward, and a shorter curved bar turned outward; Editum—absent; Clavus—rounded, almost produced; Ædœagus—not ornamented; Vesica—with two small cornuti.

Eurypsyche similis Butler. Fig. 214A.

Uncus—tongue shaped; Peniculus—present ?; Scaphium and Subscaphium—absent; Harpe—rounded, spinose, slightly pointed; Marginal spines—absent ?; Corona—absent; Protuberances—three curved processes; Editum—.....; Clavus—rounded; Ædœagus—not ornamented; Vesica—with a row of very large teeth.

Subsection Ib

There are seven genotypes in this section one of which—*Scotogramma submarina* Grt.—is not figured on the plates of male genitalia. Only two of the remaining six show any resemblance. There are *Barathra albicolon* Ochs. and *Neuria reticulata* Linn.

Cardepia irrisor Ersch. Fig. 218A.

Uncus—spatulate; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent ?; Corona—present; Protuberances—a broad chitinous organ somewhat pointed at its tip; Editum—.....; Clavus—concave on one side, irregular on the other; Ædœagus—.....; Vesica—.....

Trichocosmia inornata Grt. Fig. 222A.

Uncus—spatulate; Peniculus—absent ?; Scaphium and Subscaphium—absent; Harpe—peaked; Marginal spines—present,

some of which are very stout; Corona—absent; Protuberances—a very slight fold near the apex of each harpe, and the right harpe bears a club shaped organ with small teeth at its tip; Editum—absent; Clavus—more or less rounded; Ædœagus—bears a single spine; Vesica—spined.

Barathra albicolon Ochs. Fig. 226A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—trigonate, spinose; Marginal spines—present; Corona—present; Protuberances—a flat, slightly scobinated strap above which is a more slender curved organ; Editum—present; Clavus—produced; Ædœagus—orifice with a hook on one side, and a band of teeth; Vesica—with a band of teeth.

Neuria reticulata Vill. (griseo-reticulata Retzius). Fig. 242A.

Uncus—tongue shaped; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—trigonate, spinose; Marginal spines—present; Corona—present; Protuberances—a chitinous flap, a ridge, and a small curved bar; Editum—present; Clavus—scobinated; Ædœagus—orifice with a hook; Vesica—with a band of small teeth.

Dianthoecia carpophaga Bork. Fig. 234A.

Uncus—simple; Peniculus—absent; Scaphium and Subscaphium—absent; Harpe—small, rounded, spinose; Marginal spines—absent; Corona—absent; Protuberances—a small, flat lobe with rounded tip, and a chitinous fold; Editum—present; Clavus—rounded; Ædœagus—with two scobinated lobes, one on each side; Vesica—with a small bulbed cornutus.

Sideridis evidens Hub. Fig. 238A.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—few; Corona—present; Protuberances—a curved strap slightly rough at its tip; Editum—present; Clavus—produced; Ædœagus—not ornamented; Vesica—not ornamented.

Subsections IIa and IIb

In these two sections there are seven genotypes. The male genitalia of five of these are figured. The two not illustrated are

Craterestra lucina Druce, and *Discestra chartaria* Grt. All seven genotypes can be readily separated on the basis of their frons and antennæ and the genitalia of those which have been studied show enough differences to warrant their separation.

Xanthopastes timais Cram. Fig. 246A.

Uncus—large, bilobed, spinose; Peniculum—.....; Scaphium and Subscaphium—absent; Harpe—truncated; spinose; Marginal spines—absent; Corona—present; Protuberances—on the left harpe only a flat, rounded, spinose projection; Editum—.....; Clavus—rounded, very spinose; Ædœagus—not ornamented?; Vesica—with a cornutus and many small spines.

Cea immacula Grt. Fig. 266A.

Uncus—tongue shaped; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—few present; Corona—absent; Protuberances—a strongly bent chitinous strap; Editum—present; Clavus—rounded; Ædœagus—the base provided with a long hook; Vesica—not ornamented.

Trichoclea decepta Grt. Fig. 8B.

Uncus—simple; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent; Corona—absent; Protuberances—a strap rounded at its tip, also a chitinous ridge hardly free and with a waved edge (two views are shown of this structure in the figure); Editum—absent; Clavus—produced, more on the right side. Both sides with bristles on the rounded portion; Ædœagus—scobinated on one side; Vesica—without ornamentation.

Ichneutica ceraunias Meyrick. Fig. 250A.

Uncus—tongue shaped; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, spinose; Marginal spines—absent; Corona—present; Protuberances—a flat, chitinous organ drawn to a point and bearing transverse ridges; Editum—absent; Clavus—rounded; Ædœagus—not ornamented; vesica—not ornamented.

Miodera stigmata Smith. Fig. 262A.

Uncus—slender, diamond tip; Peniculus—present; Scaphium and Subscaphium—absent; Harpe—rounded, not spinose; Mar-

ginal spines—absent; Corona—present; Protuberances—a broad, flat hook and a chitinous thickening hardly free at its tip; Editum —present; Clavus—rounded; Ædœagus—orifice with a single cornutus; Vesica—with a large cornutus ?.

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CONCLUSION

The reader may notice that there are a few Hadenine genotypes which are not mentioned in this paper. The omissions are due to the lack of material. These omissions are few in number and it seemed best not to delay publication on their account, especially since there was no assurance that the gaps could be quickly filled.

These needed species, when available, will form the basis for a short supplement to this article. Polia has been omitted because its type, flavicincta, is not a Hadenine and therefore cannot replace either Mamestra or Hadena.

INDEX TO FIGURES

Note: The letter "A" after a number usually indicates a figure of the male genitalia.

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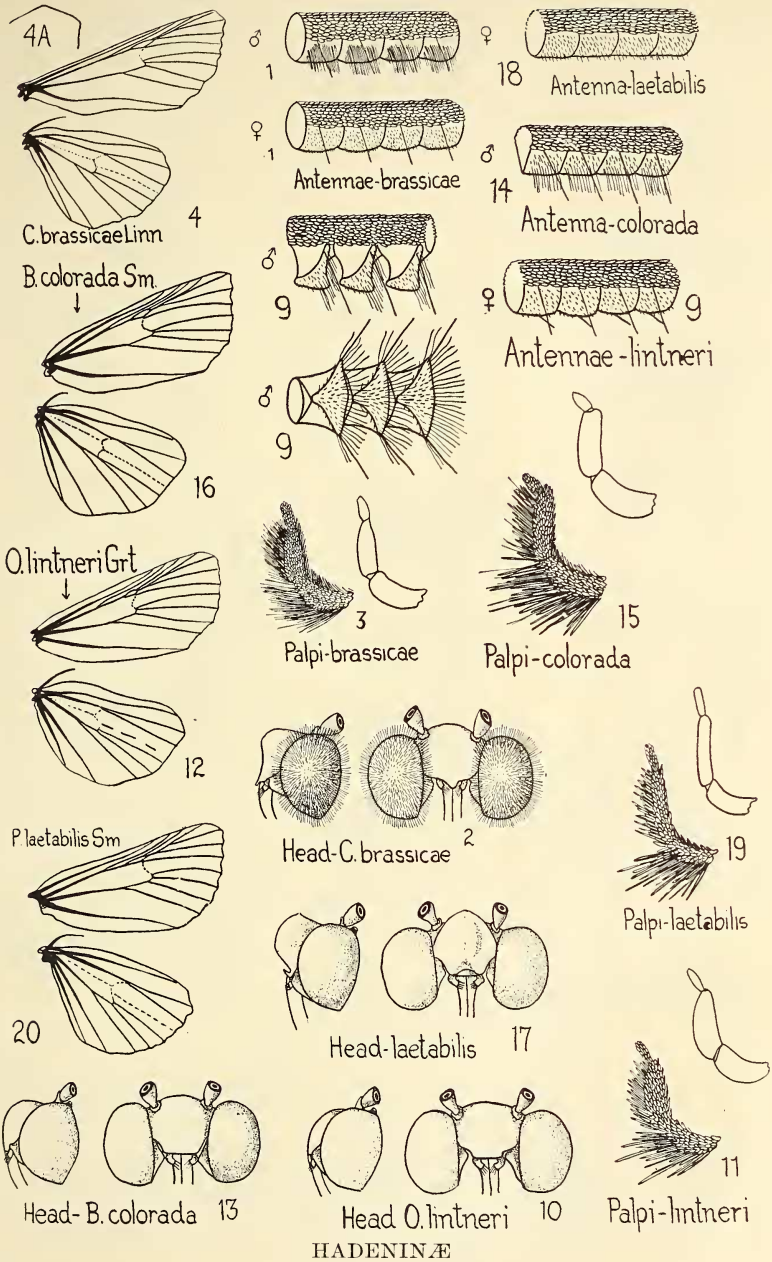
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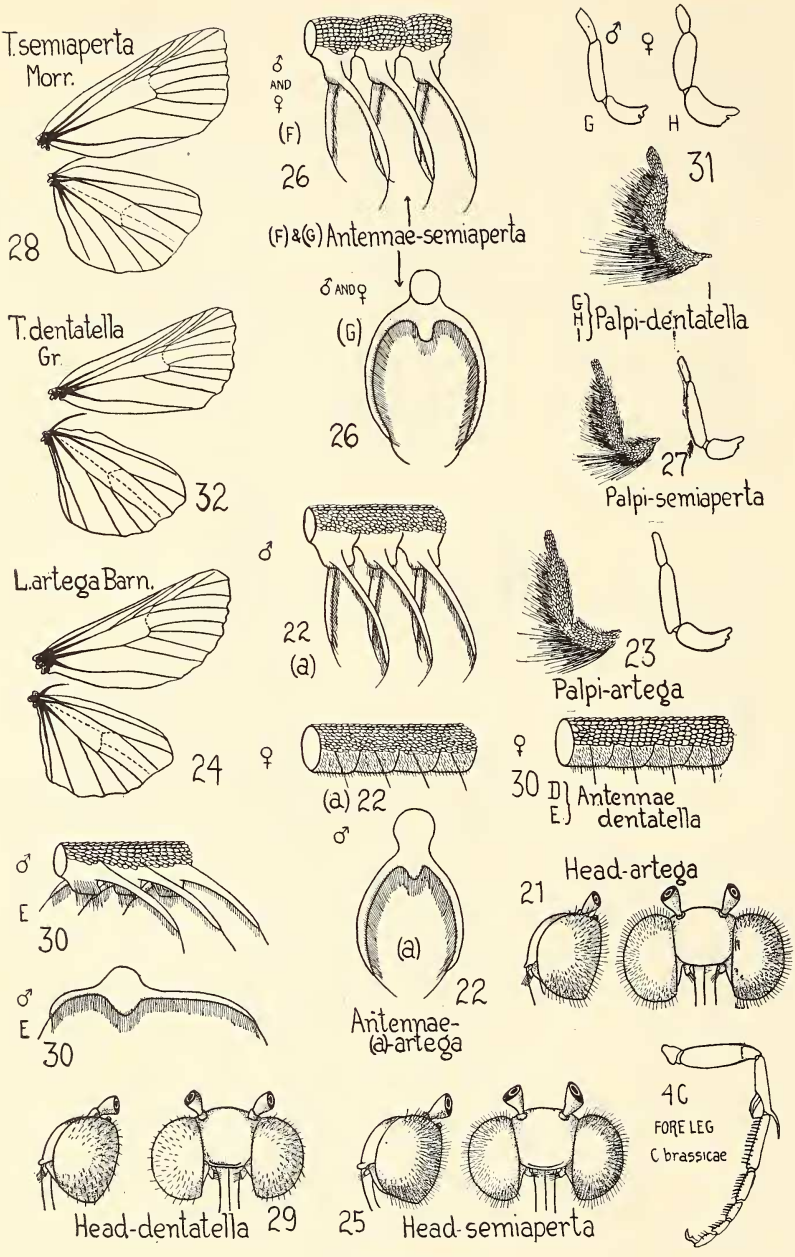
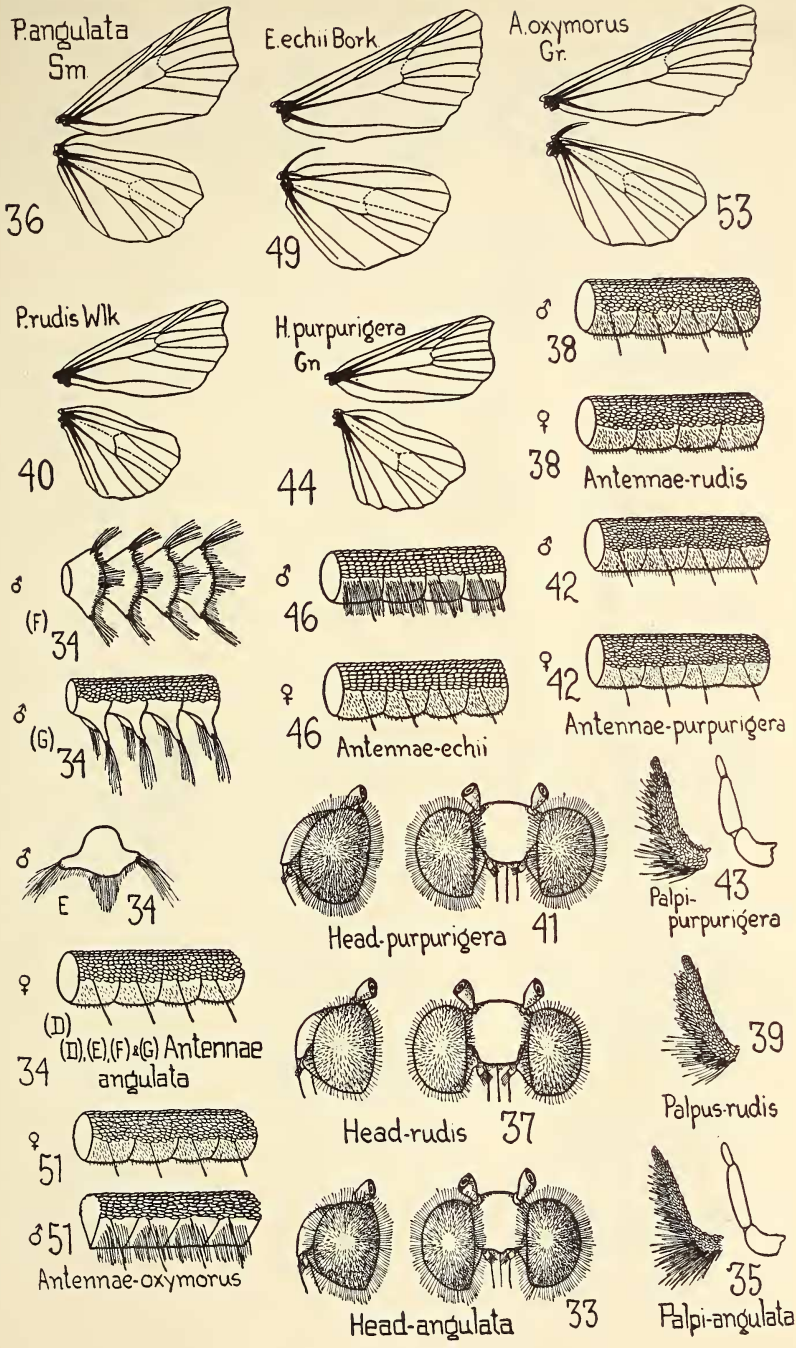
Head-C. brassicae 2
Head-laetabilis 17
Head-B. colorada 13
Head O. lintneri 10
♀ 18
Antenna-laetabilis
♂ 14
Antenna-colorada
♀ 9
Antennae-lintneri
15
Palpi-colorada
19
Palpi-laetabilis
11
Palpi-lintneri

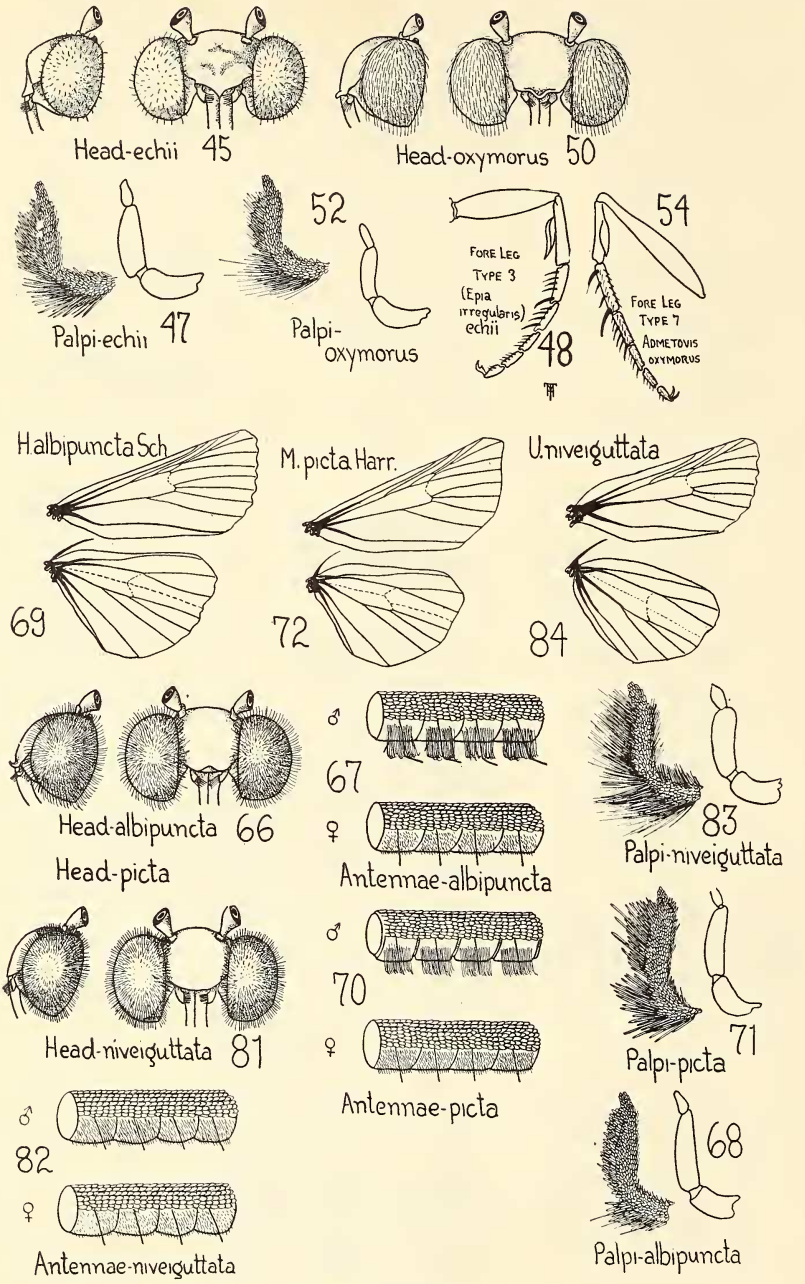
HADENINÆ

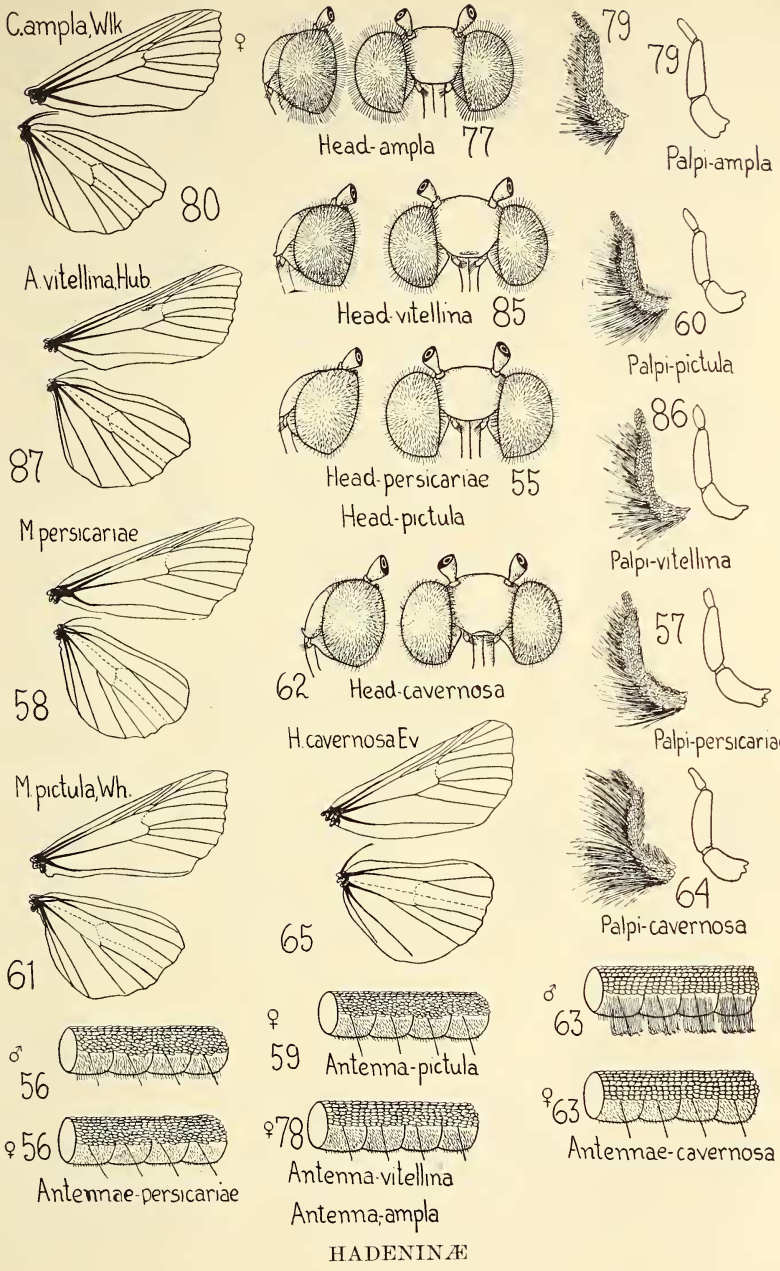

T. semiaperta Morr.
28
♂ AND ♀ (F)
26
(F) & (G) Antennae-semiaperta
♂ ♀
G H
31
I
G H I Palpi-dentatella
♂ AND ♀ (G)
26
T. dentatella Gr.
32
27
Palpi-semiaperta
L. artega Barn.
24
♂
22 (a)
23
Palpi-artega
♀
(a) 22
♀
30 D E Antennae dentatella
♂
(a)
22
Antennae-(a)-artega
♂ E
30
♂ E
30
Head-artega
21
Head-dentatella
29
25
Head-semiaperta
40
FORE LEG
C brassicae

HADENINÆ

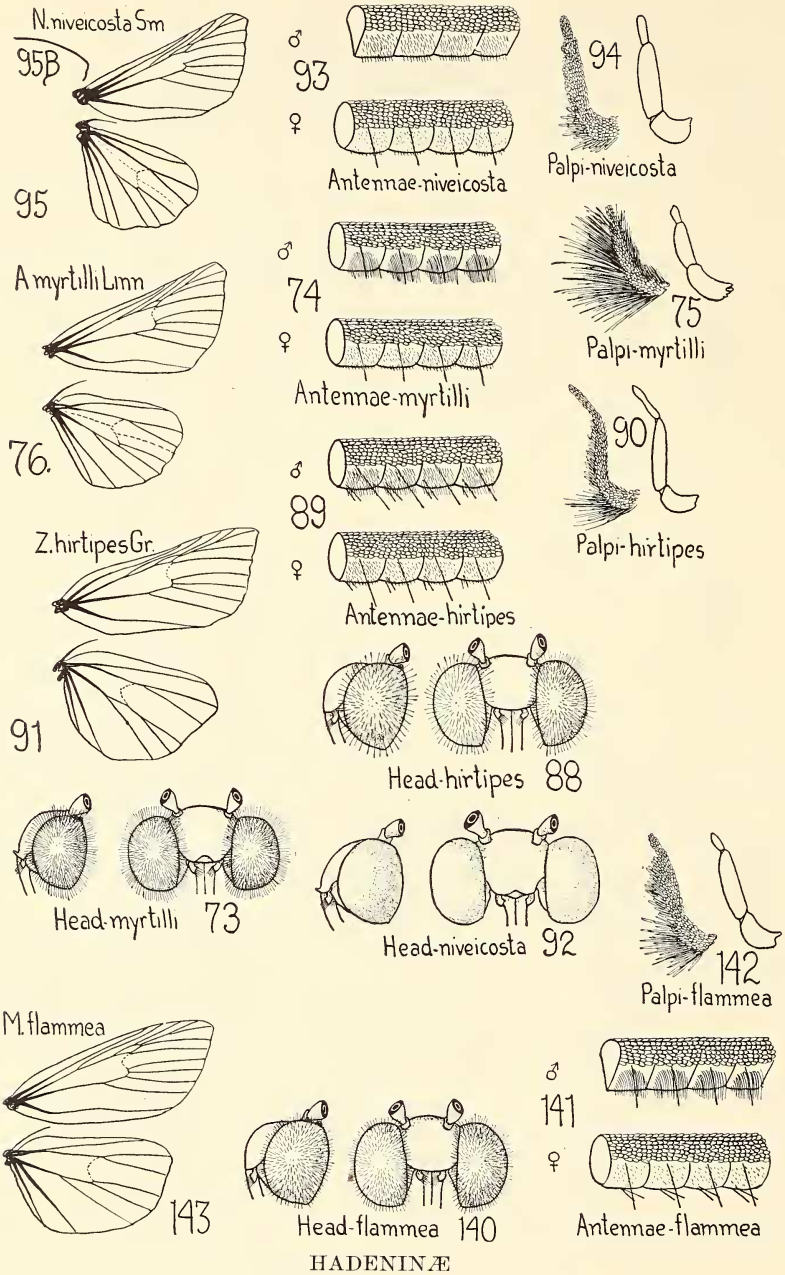

P.angulata Sm.
36
E.echii Bork.
49
A.oxymorus Gr.
53
P.rudis Wlk
40
H.purpurigera Gn
44
♂ 38
♀ 38 Antennae-rudis
♂ (F) 34
♂ 46
♂ 42
♂ (G) 34
♀ 46 Antennae-echii
♀ 42 Antennae-purpurigera
♂ E 34
Head-purpurigera 41
Palpi-purpurigera 43
♀ (D) (E),(F)&(G) 34 Antennae angulata
Head-rudis 37
39 Palpus-rudis
♀ 51
♂ 51 Antennae-oxymorus
Head-angulata 33
35 Palpi-angulata

HADENINÆ

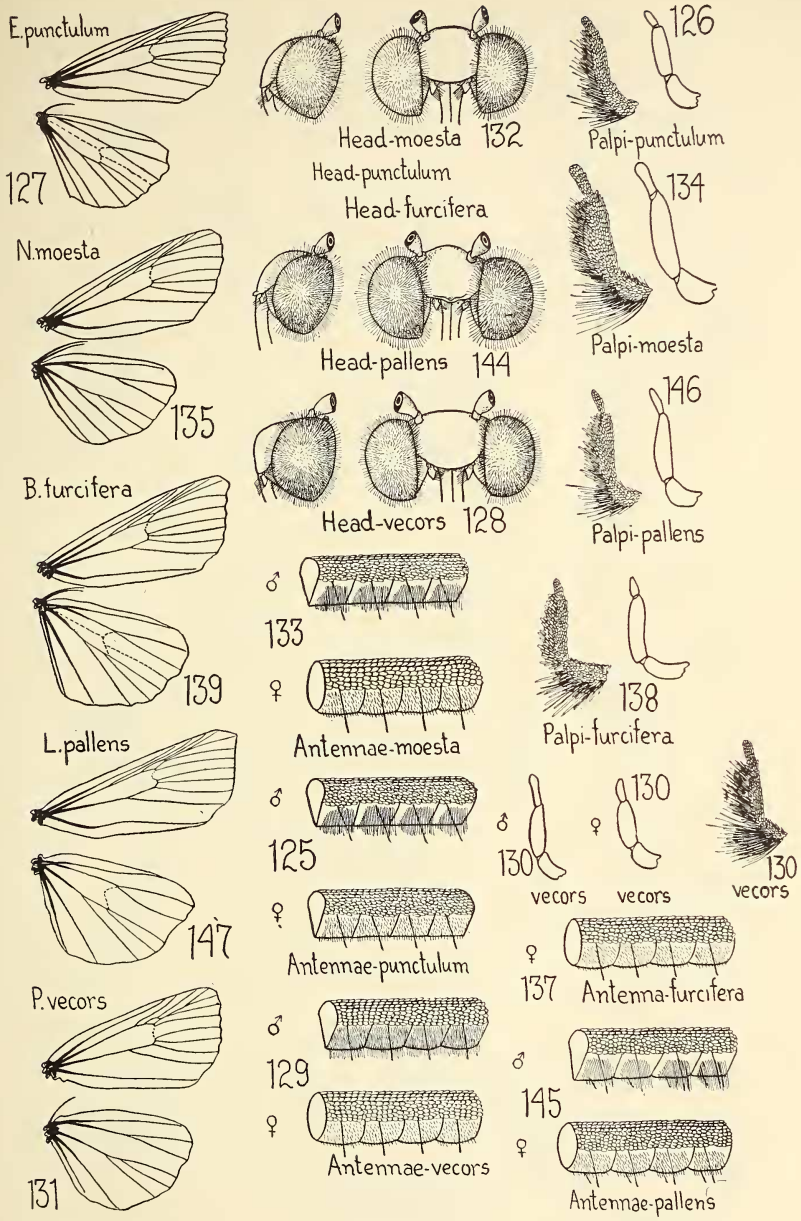

Head-echii 45
Head-oxymorus 50
Palpi-echii 47
52
Palpi-oxymorus
Fore Leg Type 3 (Epia irregularis) echii
48
54
Fore Leg Type 7 Admetovis oxymorus
H.albipuncta Sch
69
M. picta Harr.
72
U.niveiguttata
84
Head-albipuncta 66
Head-picta
♂
67
♀
Antennae-albipuncta
83
Palpi-niveiguttata
Head-niveiguttata 81
♂
70
♀
Antennae-picta
Palpi-picta 71
♂
82
♀
Antennae-niveiguttata
68
Palpi-albipuncta


C.ampla,Wlk
♀
80
Head-ampla 77
79
79
Palpi-ampla
A.vitellina,Hub
87
Head-vitellina 85
60
Palpi-pictula
Head-persicariae 55
Head-pictula
86
Palpi-vitellina
M.persicariae
58
62 Head-cavernosa
57
Palpi-persicariae
H.cavernosa Ev
65
M.pictula,Wh.
61
64
Palpi-cavernosa
♂
56
♀ 56
Antennae-persicariae
♀
59 Antenna-pictula
♂
63
♀78
Antenna-vitellina
Antenna-ampla
♀63
Antennae-cavernosa.

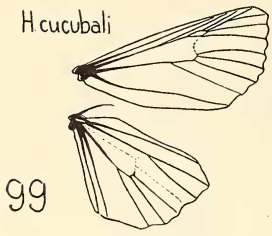
HADENINÆ

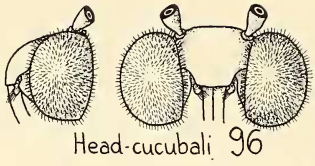

N. niveicosta Sm
95β
95
♂
93
♀
Antennae-niveicosta
94
Palpi-niveicosta
A. myrtilli Linn
76.
♂
74
♀
Antennae-myrtilli
75
Palpi-myrtilli
Z. hirtipes Gr.
91
♂
89
♀
Antennae-hirtipes
90
Palpi-hirtipes
Head-hirtipes 88
Head-myrtilli 73
Head-niveicosta 92
142
Palpi-flammea
M. flammea
143
Head-flammea 140
♂
141
♀
Antennae-flammea

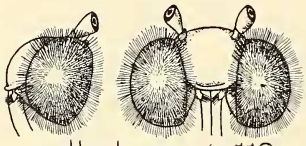
HADENINÆ

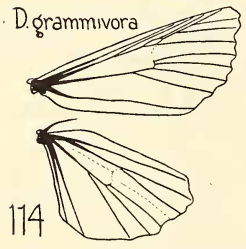

E.punctulum
127
Head-moesta 132
Head-punctulum
Head-furcifera
126
Palpi-punctulum
N.moesta
135
Head-pallens 144
134
Palpi-moesta
B.furcifera
139
Head-vecors 128
146
Palpi-pallens
♂
133
♀
Antennae-moesta
138
Palpi-furcifera
L.pallens
147
♂
125
♀
Antennae-punctulum
♂ 130
♀ 130
vecors vecors
130
vecors
♀
137 Antenna-furcifera
P.vecors
131
♂
129
♀
Antennae-vecors
♂
145
♀
Antennae-pallens

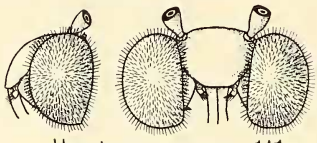
HADENINÆ



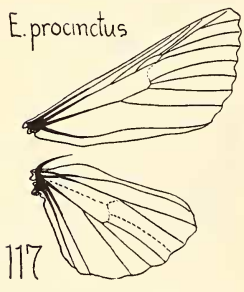


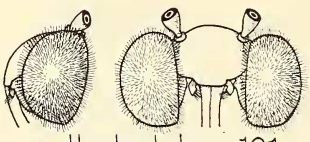


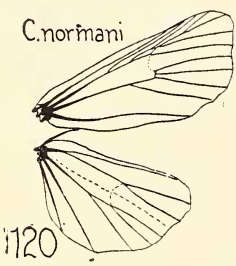


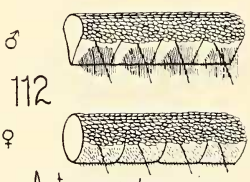


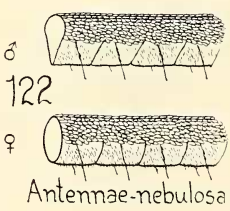
Head-procinctus

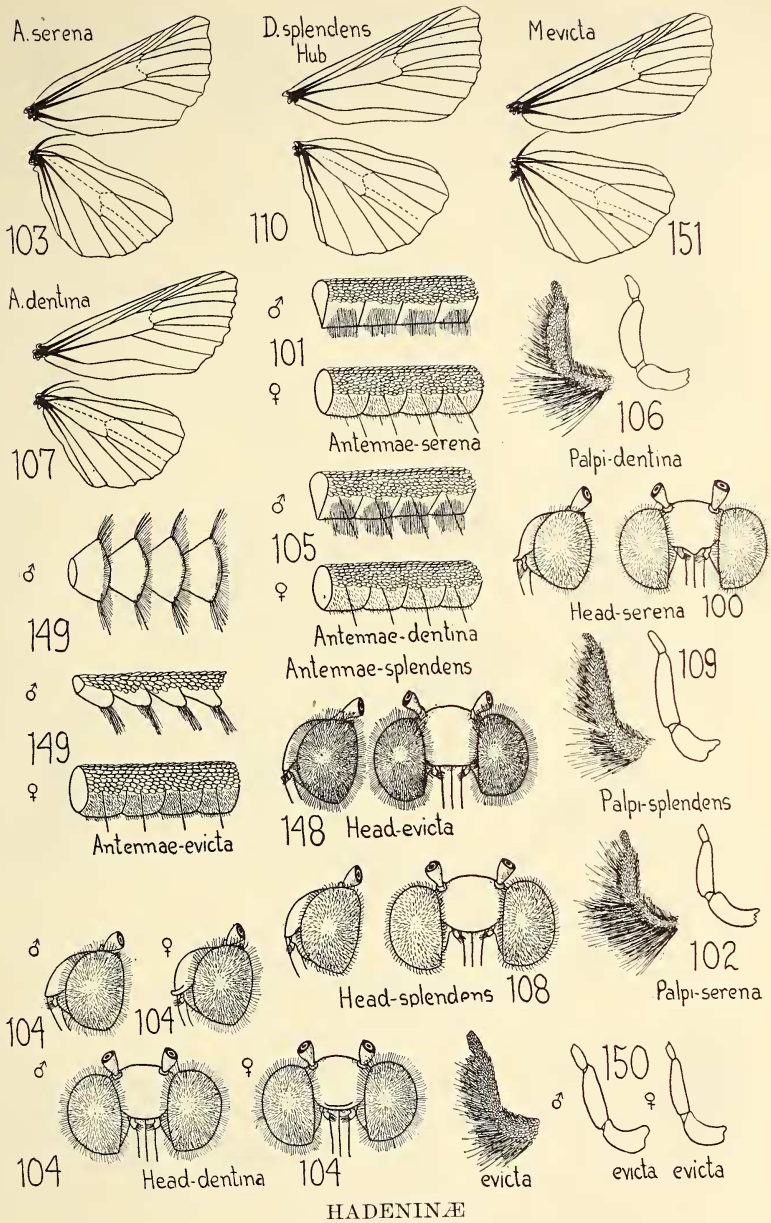




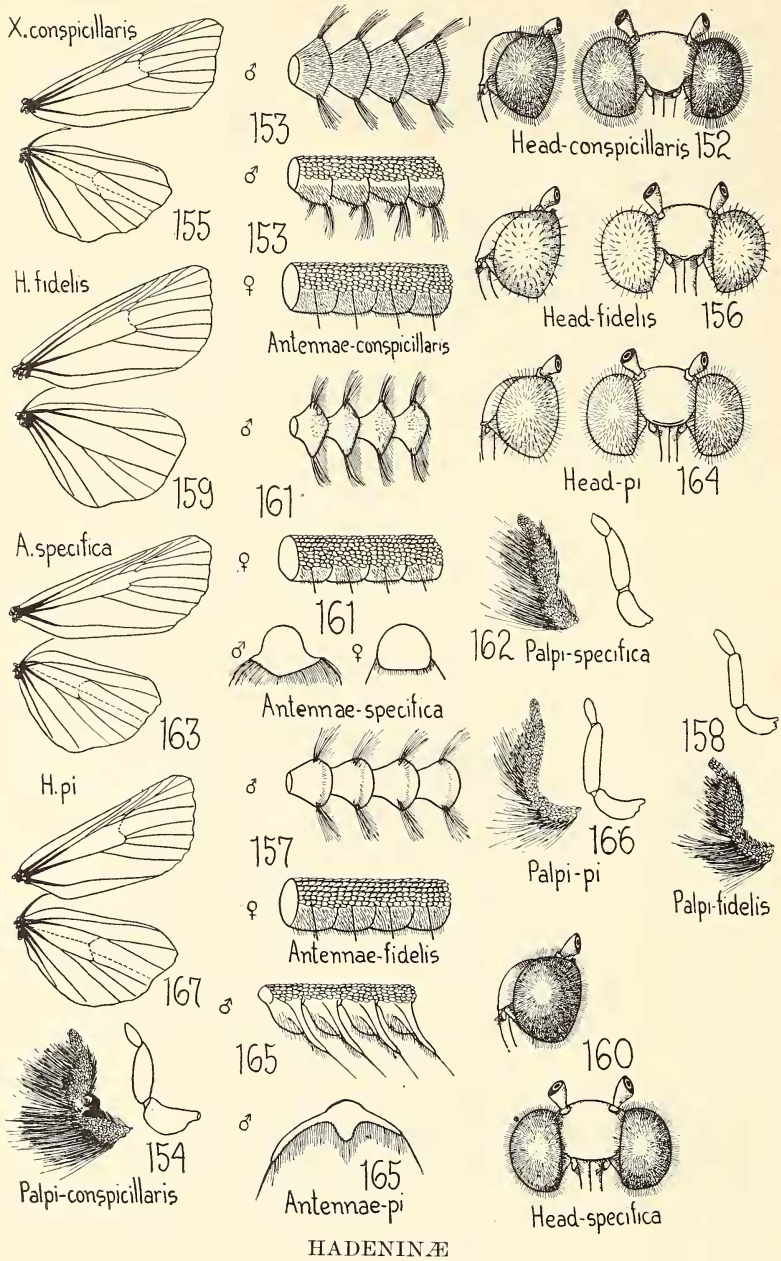




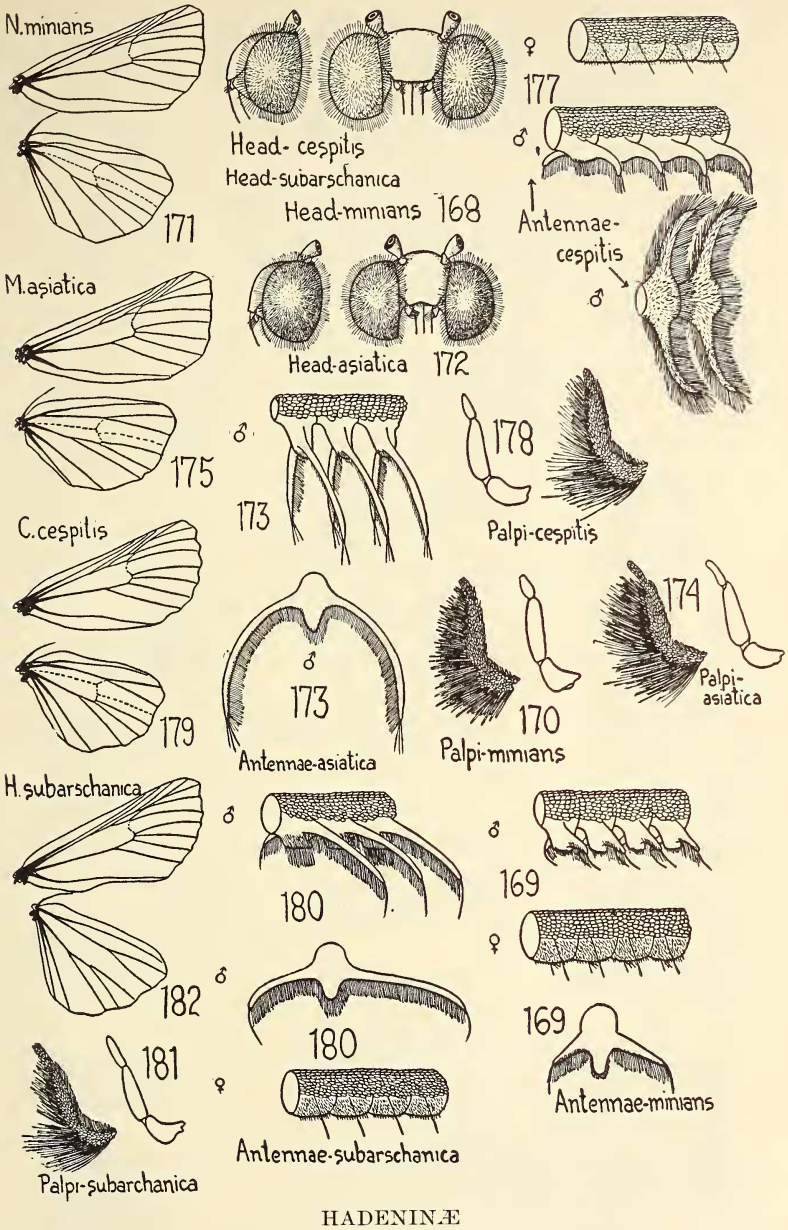



A. serena
103
D. splendens
Hub
110
Mevicta
151
A. dentina
107
♂
101
♀
Antennae-serena
106
Palpi-dentina
♂
105
♀
Antennae-dentina
Antennae-splendens
Head-serena 100
♂
149
109
♂
149
♀
Antennae-evicta
148 Head-evicta
Palpi-splendens
102
Palpi-serena
Head-splendens 108
♂
104
♀
104
♂
104
Head-dentina
♀
104
♂
evicta
150
♀
evicta evicta

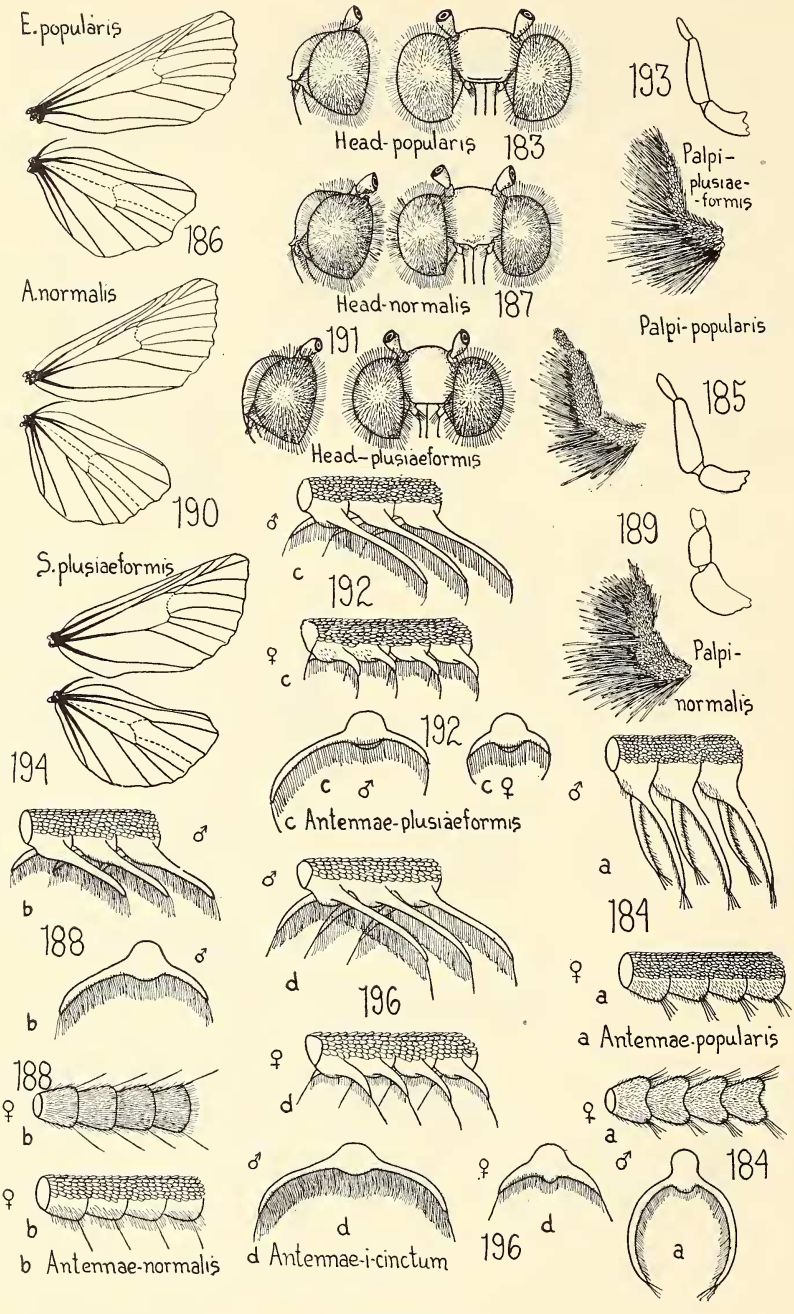
HADENINÆ


X.conspicillaris
155
♂
153
♂
153
♀
Antennae-conspicillaris
Head-conspicillaris 152
Head-fidelis 156
H.fidelis
159
♂
161
Head-pi 164
A.specifica
163
♀
161
♂ ♀
Antennae-specifica
162 Palpi-specifica
158
H.pi
167
♂
157
♀
Antennae-fidelis
166
Palpi-pi
Palpi-fidelis
♂
165
160
154
Palpi-conspicillaris
♂
165
Antennae-pi
Head-specifica

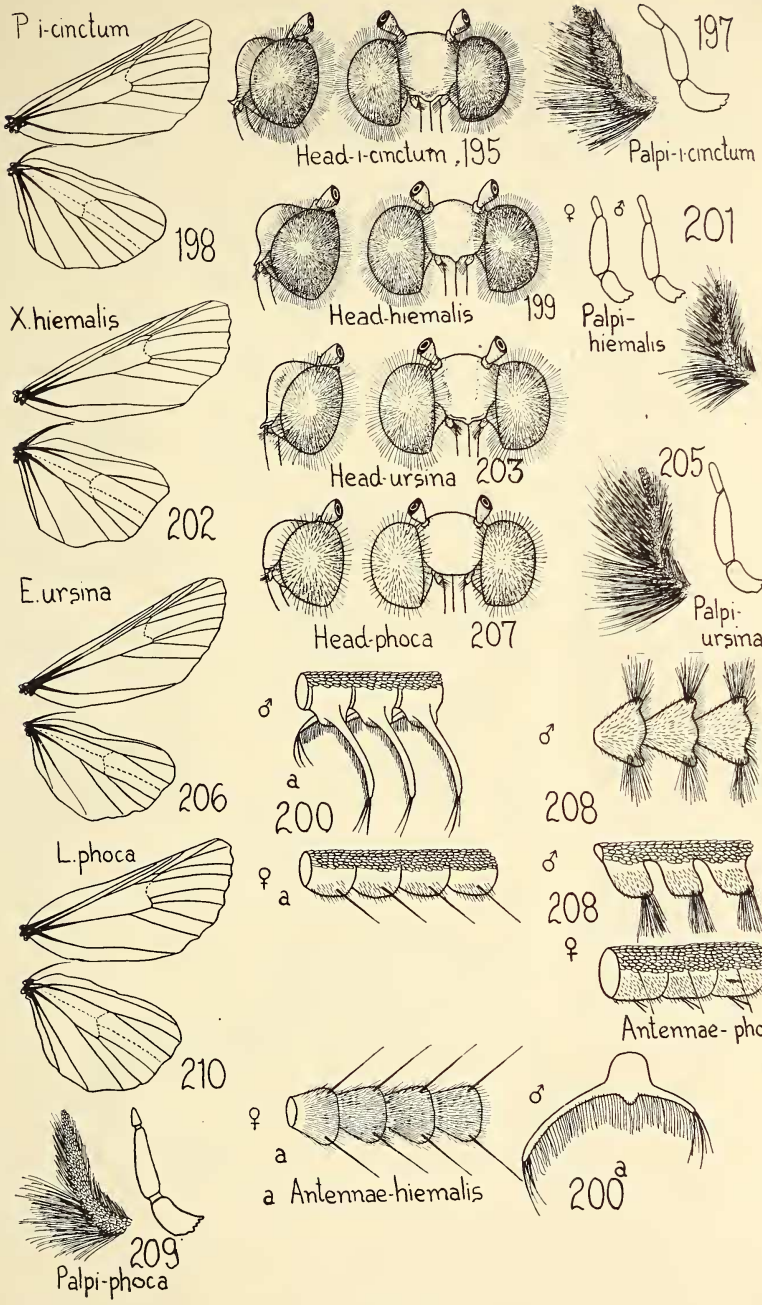
HADENINÆ


N.minians
171
Head- cespitis
Head-subarschanica
Head-minians 168
♀
177
♂
Antennae-cespitis
♂
M.asiatica
175
Head-asiatica 172
♂
173
178
Palpi-cespitis
C.cespitis
179
♂
173
Antennae-asiatica
170
Palpi-minians
174
Palpi-asiatica
H.subarschanica
182
♂
180
♂
169
♀
♂
180
169
181
♀
Antennae-subarschanica
Antennae-minians
Palpi-subarchanica

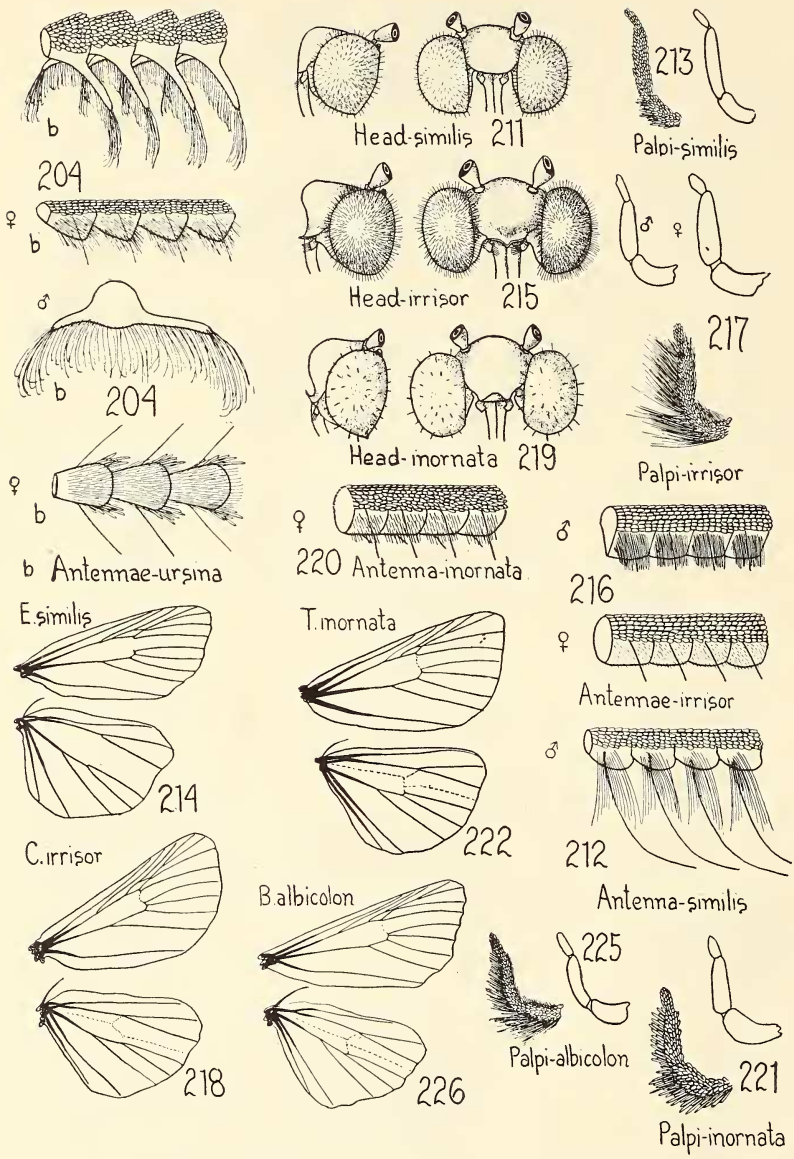
HADENINÆ


E. populariş
186
A. normalis
190
S. plusiaeformis
194
Head-populariş 183
Head-normalis 187
191
Head-plusiaeformis
193
Palpi-plusiae-formis
Palpi-populariş
185
189
Palpi-normaliş
♂
c
192
♀
c
192
c ♂
c ♀
c Antennae-plusiaeformis
♂
a
184
♀
a
a Antennae-populariş
♂
b
188
♂
b
188
♀
b
♀
b
b Antennae-normaliş
♂
d
196
♀
d
♂
d
d Antennae-i-cinctum
♀
d
196
♂
a
184

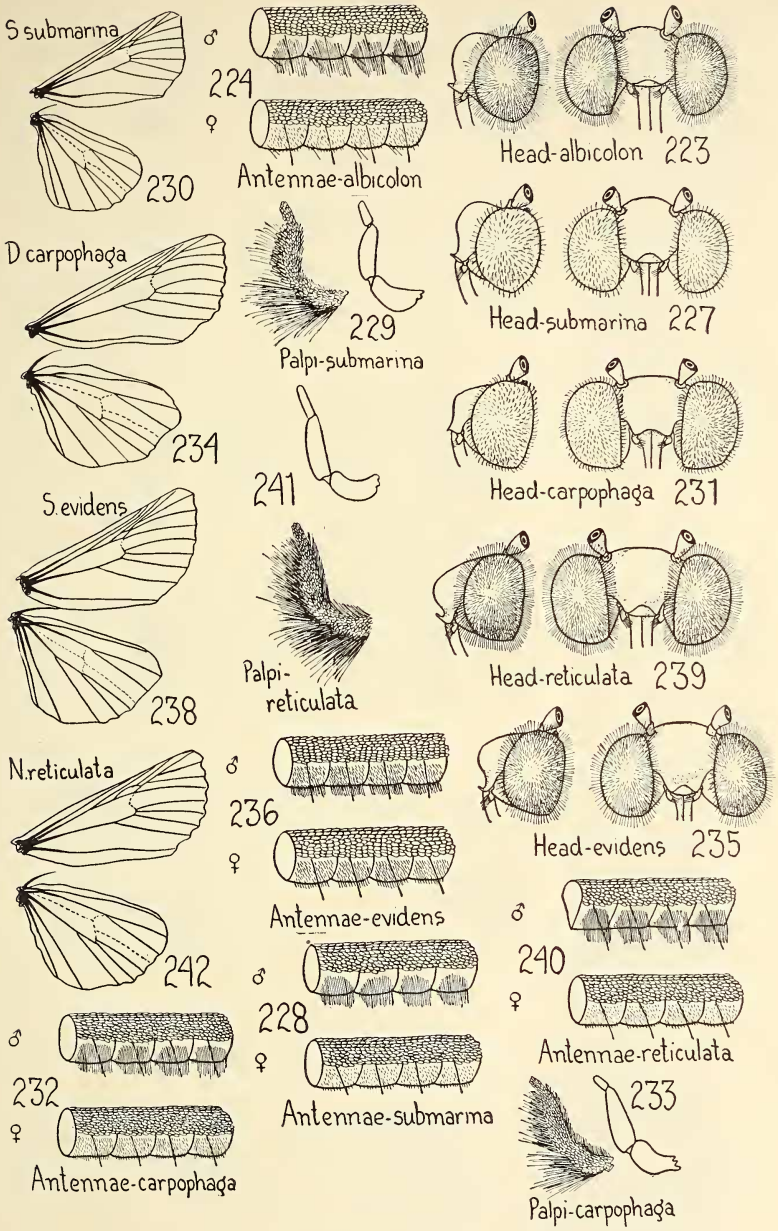
HADENINÆ

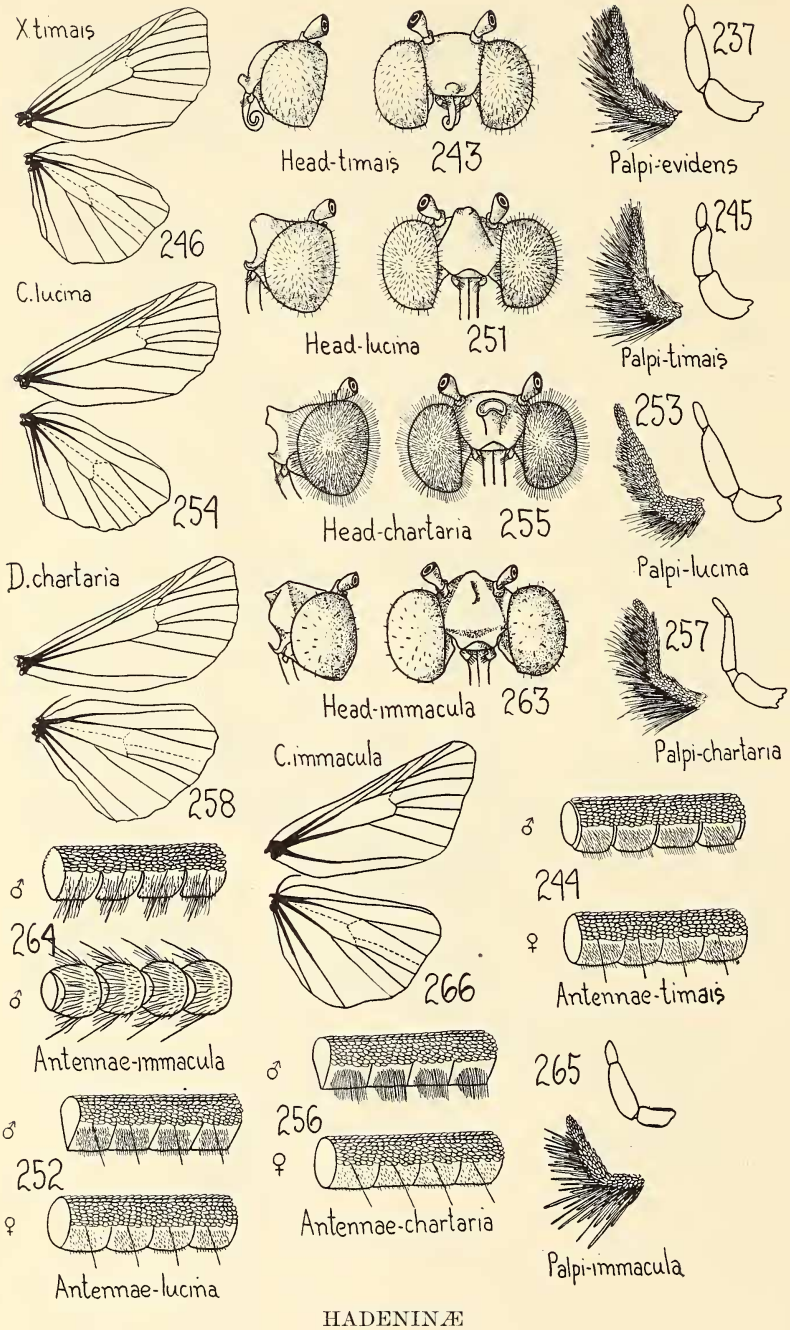

P. i-cinctum
198
Head-i-cinctum, 195
197
Palpi-i-cinctum
X. hiemalis
202
Head-hiemalis 199
♀ ♂
201
Palpi-hiemalis
Head-ursina 203
205
Palpi-ursina
E. ursina
206
Head-phoca 207
♂
a
200
♂
208
L. phoca
210
♀ a
♂
208
♀
Antennae-phoca
♀
a
a Antennae-hiemalis
♂
200a
209
Palpi-phoca

HADENINÆ

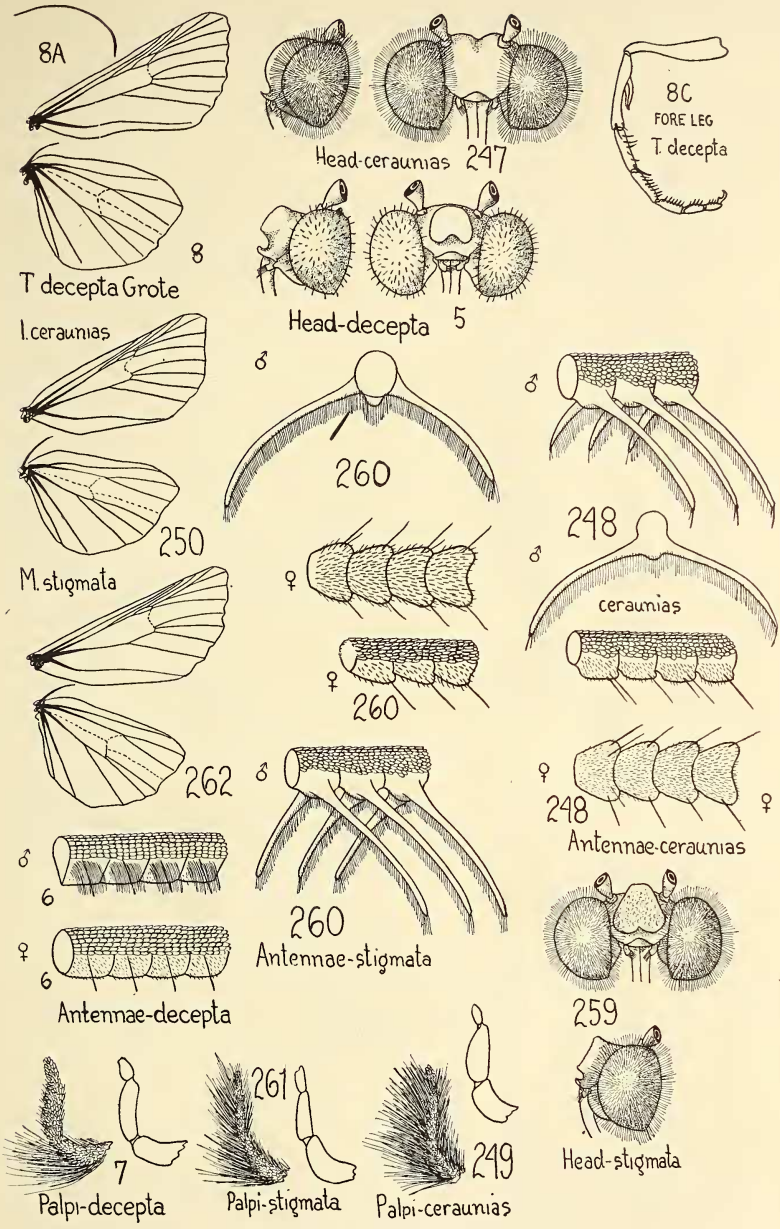

b
204
♀
b
♂
b
204
♀
b
b Antennae-ursina
Head-similis 211
213
Palpi-similis
Head-irrisor 215
♂ ♀
217
Head-inornata 219
Palpi-irrisor
♀
220 Antenna-inornata
♂
216
E.similis
214
T.inornata
♀
Antennae-irrisor
♂
222
212
Antenna-similis
C.irrisor
218
B.albicolon
226
225
Palpi-albicolon
221
Palpi-inornata

HADENINÆ

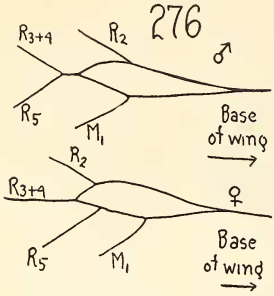

S submarina
♂
224
♀
Antennae-albicolon
Head-albicolon 223
230
D carpophaga
Palpi-submarina
229
Head-submarina 227
234
241
Head-carpophaga 231
S evidens
Palpi-
reticulata
Head-reticulata 239
238
N.reticulata
♂
236
♀
Antennae-evidens
Head-evidens 235
242
♂
240
♂
228
♀
♀
Antennae-reticulata
232
♂
233
♀
Antennae-submarina
Antennae-carpophaga
Palpi-carpophaga


X.timais
246
C.lucina
254
D.chartaria
258
♂
264
♂
Antennae-immacula
♂
252
♀
Antennae-lucina
Head-timais 243
237
Palpi-evidens
Head-lucina 251
245
Palpi-timais
Head-chartaria 255
253
Palpi-lucina
Head-immacula 263
257
Palpi-chartaria
C.immacula
266
♂
244
♀
Antennae-timais
♂
256
♀
Antennae-chartaria
265
Palpi-immacula

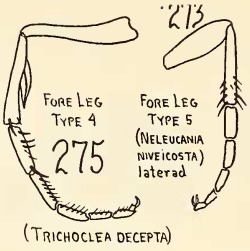
HADENINÆ

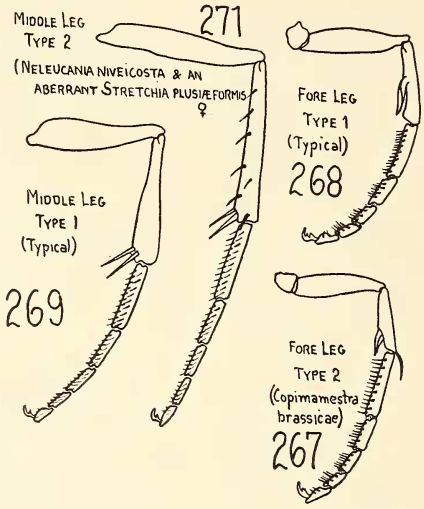

8A
8
T decepta Grote
Head-ceraunias 247
8C
FORE LEG
T. decepta
Head-decepta 5
I. ceraunias
250
M. stigmata
260
♂
♀
260
248
ceraunias
262
♂
6
♀
6
Antennae-decepta
260
Antennae-stigmata
248
Antennae-ceraunias
259
Head-stigmata
7
Palpi-decepta
261
Palpi-stigmata
249
Palpi-ceraunias

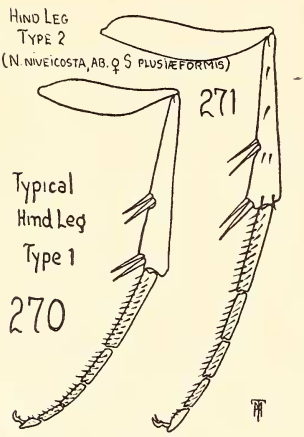
HADENINÆ

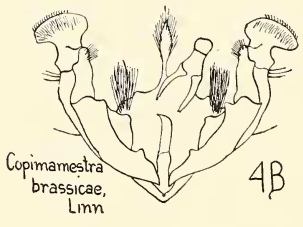


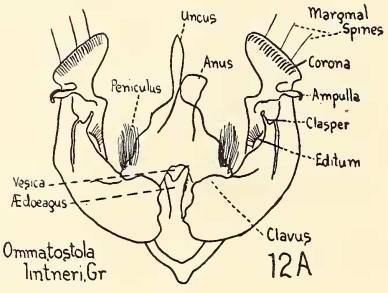
Variations in the areole of Trichoclea decepta

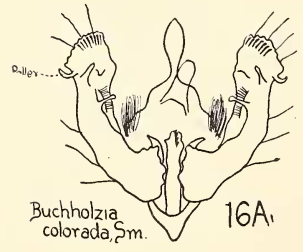


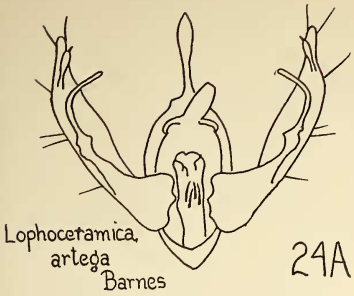


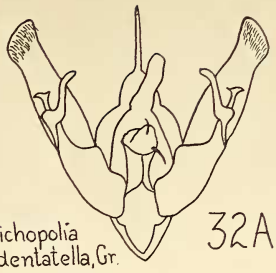






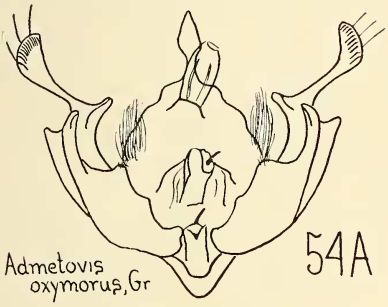



Lophoceramica, artega Barnes
24A

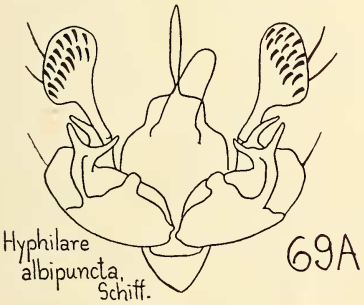

Trichopolia dentatella, Gr.
32A

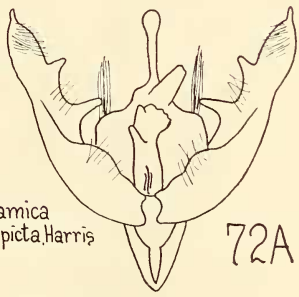

Tricholita semiaperta, Morr.
28A

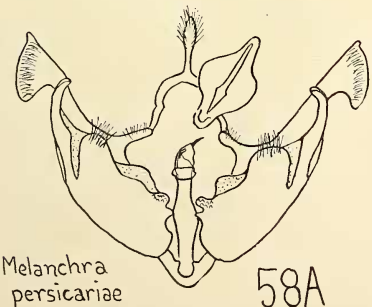

Epia echii, Bork
49A


Admetovis oxymorus, Gr
54A


Ulolonche niveiguttata, Gr.
84A


Hyphilare albipuncta, Schiff.
69A


Ceramica picta, Harris
72A


Melanchra persicariae Linn
58A


Hyssia cavernosa, Evers.
65A

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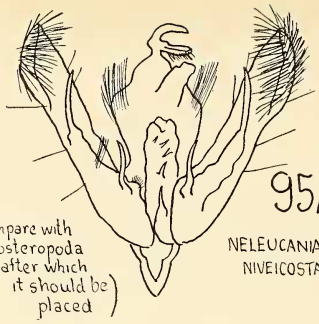
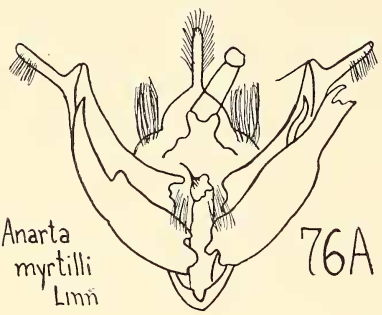
Zosteropoda hirtipes, Gr 91A

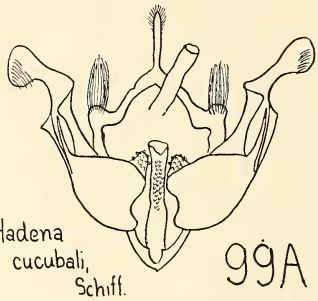


(compare with Zosteropoda after which it should be placed)

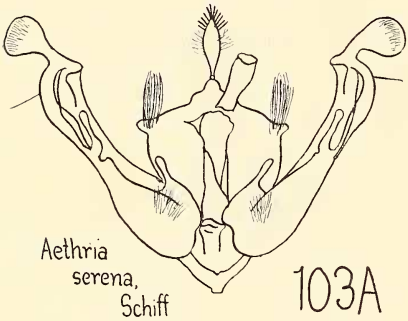
95A NELEUCANIA NIVEICOSTA, SM.



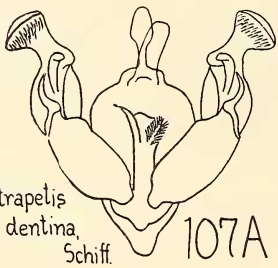
Anarta myrtilli Linn 76A



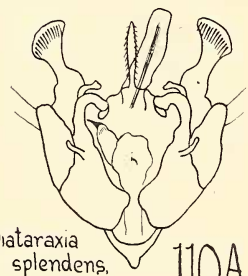
Hadena cucubali, Schiff. 99A



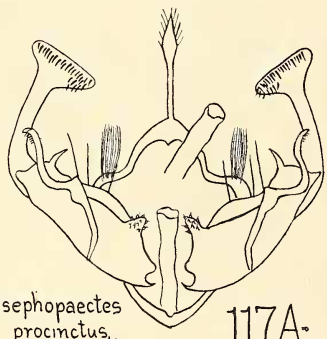
Aethria serena, Schiff 103A



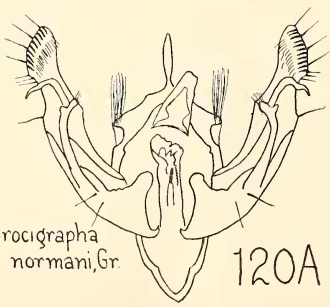
Astrapetis dentina, Schiff. 107A



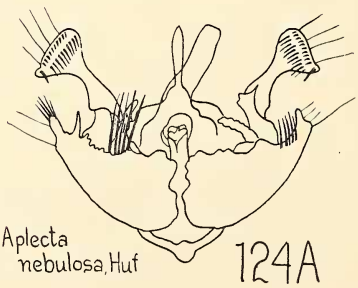
Diataraxia splendens, Hub. 110A



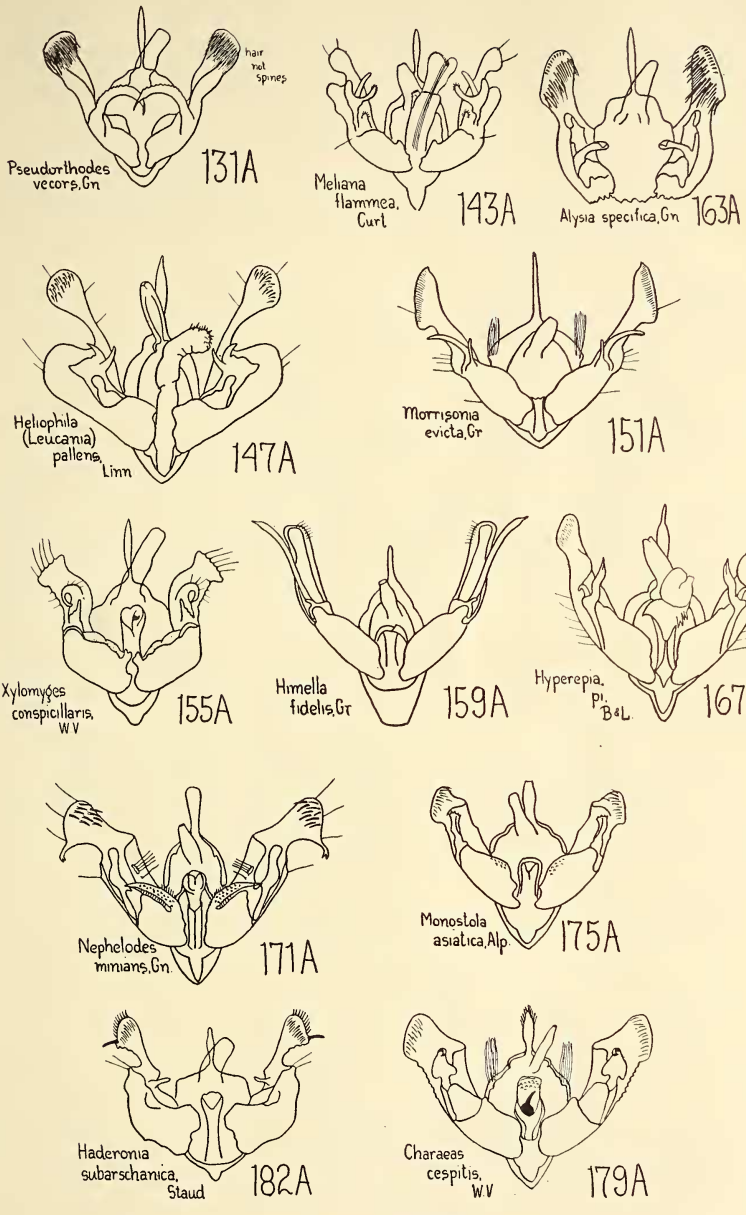
Eupsephopaectes procinctus, Gr. 117A.



Crocigrapha normani, Gr. 120A



Aplecta nebulosa, Huf 124A


hair
net
spines
Pseudorthodes vecors, Gn
131A
Meliana Hammea, Curt
143A
Alysia specifica, Gn
163A
Heliophila (Leucania) pallens, Linn
147A
Morrisonia evicta, Gr
151A
Xylomyges conspicillaris, W V
155A
Himella fidelis, Gr
159A
Hyperepia, Pl. B&L.
167A
Nephelodes minians, Gn.
171A
Monostola asiatica, Alp.
175A
Haderonia subarschanica, Staud
182A
Charaeas cespitis, W V
179A

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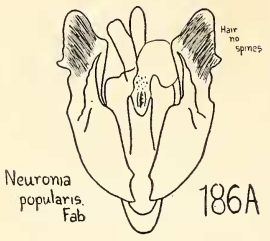
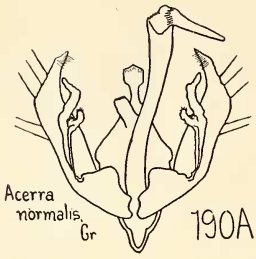
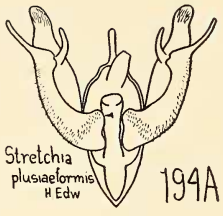
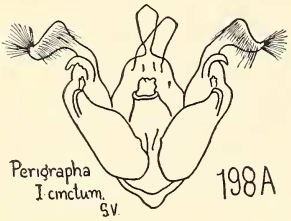
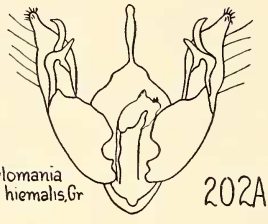
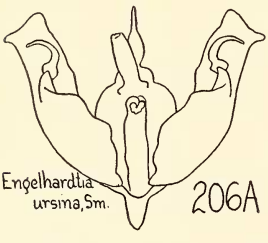

Hair no spines
Neuronia popularis, Fab
186A


Acerra normalis, Gr
190A

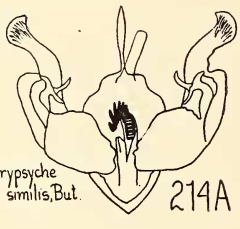

Stretchia plusiaeformis H Edw
194A


Perigrapha I cinctum, S.V.
198A

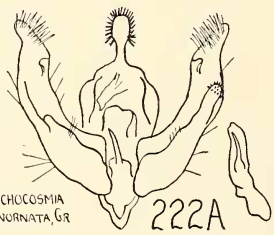

Xylomania hiemalis, Gr
202A

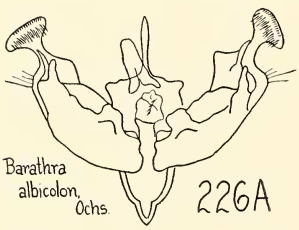

Engelhardtia ursina, Sm.
206A


Lasiestra phoca, Mosch
210A


Eurypsyche similis, But.
214A


Cardepia irrisor, Ersch
218A


TRICHOCOSMIA INORNATA, GR
222A


Barathra albicolon, Ochs.
226A


Dianthoecia carpophaga B.
234A

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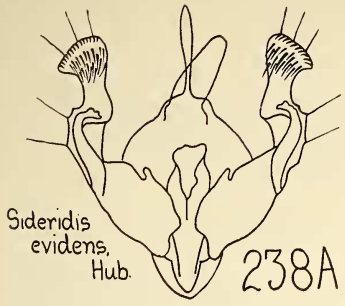
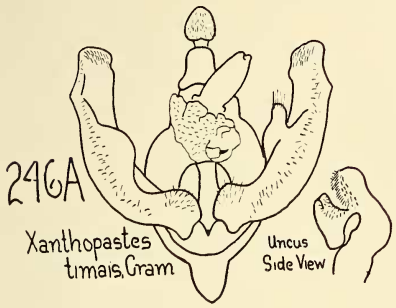
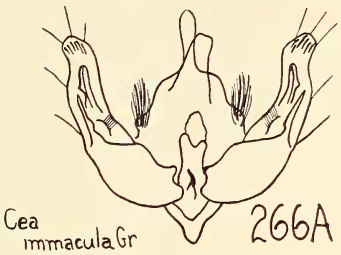
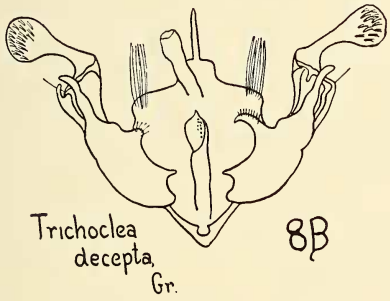
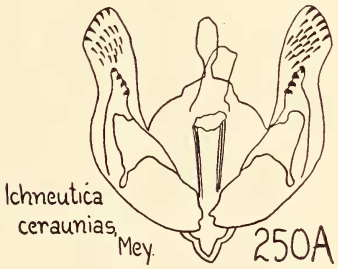

Sideridis
evidens,
Hub.
238A

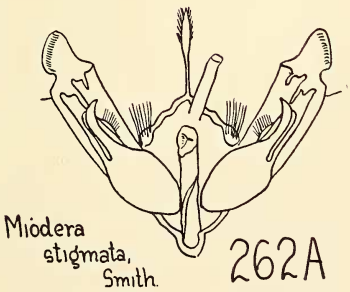

242A
Neuria
reticulata,
Vill.


246A
Xanthopastes
timais, Gram
Uncus
Side View


Cea
immacula Gr
266A


Trichoclea
decepta,
Gr.
8B


Ichneutica
ceraunias,
Mey.
250A


Miodera
stigmata,
Smith.
262A

HADENINÆ